

The background of the cover is a photograph of the United States Capitol building in Washington, D.C. The building is shown from a low angle, looking up at the dome. A large, white rectangular sign with a black border is superimposed over the center of the image, hanging from the top by two black lines. The sign has the word "CLOSED" written in large, bold, red capital letters. The sky is a clear, bright blue.

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Full Length Research Paper

Planning and Managing of Development Projects in Bangladesh: Future Challenges for Government and Private Organizations

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This paper aims to study planning and managing process of development projects in Bangladesh. It unravels the institutional inadequacies and challenges in planning and managing procedure. The deductive nature of the study has been conducted through explanatory research design. The key to a triumphant project is planning. Creating a project plan is the first thing that ought to do when embarked on any kind of project. The project intention in Bangladesh is to build up the competence of diverse sector organizations to accomplish their different functions. Different public organizations are continually seeking ways to make projects successfully implemented effectively and efficiently. Successful implementation of project is vital for socio-economic development of the developing countries like Bangladesh. Furthermore, from project planning to implementation, Bangladesh, as a developing country, faces very serious problems. The study may facilitate the Government, different public organization, the political leaders, civil society, private organization, donor agencies etc. regarding future policy issues in planning and managing development projects.

Key words: Planning and managing procedures, development projects, future challenges, government and private organizations.

INTRODUCTION

The planning and managing development projects have been considered as one of the foremost dilemmas in developing countries like Bangladesh. Bangladesh is now suffering from serious objections in implementation of developing projects claimed by World Bank, International Monetary fund and other development partners.

The government of Bangladesh has taken different measures as desired by the development partners to regain her dignity in project implementation. The entire responsibility of taking and implementing development projects lies on the shoulder of Ministry of Planning which has a rhetoric history of emergence. In July 1953,

'Planning Board' was established in East Pakistan for Five Years.

In April 1957, according to the idea of the U.S.A. consultant Barnard L. Gadioux, this board was given priority and it was recognized as Planning Commission (Hasan and Hossien, 1999). In the mid 1950s, a provincial planning board was established under the united front government of the then East Pakistan (Hasan and Hossien, 1999).

The planning commission was established in Bangladesh on January 1972 after a blooded independence. Throughout the independence, several five year develop-

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ment plans have been commenced in development sector of Bangladesh (MoP, 2010). These are: Half year plan January 1972 to June 1972; One year plan July 1972 to June 1973; First five year plan July 1973 to June 1978; Two years plan July 1978 to June 1980; Second five year plan (SFYP) (1980 to 1985); Third five year plan (TFYP) (1985 to 1990), Fourth five year plan (1990 to 1995); Fifth five year plan (1997 to 2002); and Sixth five year plan (2011 to 2016).

The National strategy for accelerated poverty reduction (NSAPR-I) was launched in 2005. The NSAPR-II titled as the "Steps Towards Change" (FY 2009 to 2011) was adopted by the present government through a process of endorsement in the Parliament (MoP, 2010). It reflected the "vision 2021" of the Government to become a mid level income country by the year 2021- the 50th year of National independence.

The Ministry of Planning used to communicate management systems and procedures throughout the project. As it has been said 'Time spent planning is never wasted'. As an indispensable element of project management, project planning entails the enlargement of action items and setting up that will continue the project moving forward on an unflinching root.

Bangladesh embarked upon planning for social and economic development immediately after independence within the framework of what the political leadership chose to call socialism and democracy. The foremost purpose of planning is that, it trims down the uncertainty that stays alive prior to a project is start taking place.

The scheme of project arrives from social problem and individual crisis turns into social crisis (Cleland, 1999). Being a developing country, it has been getting foreign direct investments and donation or even loan from international organization, development partners like Japan, USA, UK etc and the rate has been increasing day by day.

Development projects in Bangladesh squeezes actions of purchasing, hiring of commodities, mechanism or services by any contractual means. Different government agencies or procurement entities, especially the ministries, divisions, departments/directorates, and other autonomous/semi-autonomous bodies or corporations often acquire/purchase goods, services or works have been involved in the process.

Corruption and poor governance are impeding Bangladesh's efforts to decrease its enormous scarcity by reducing monetary growth and lowering the triumph of socio-economic objectives. They destroy citizens' faith in their government and discourage the foreign and household investment, which desires so badly. And they destabilize the knack of Bangladesh's development partners to prolong their support. A proactive route map is placed on card for accelerated effort in development management during last two consecutive democratic decades.

The revitalization of the Executive Committee of the National Economic Council (ECNEC) with a meeting

scheduled every week reflects the urgency of the governments in bringing about a change in development administration. The objective of the study is to diagnose the existing scenario and future policy agenda of Project Planning Process in Bangladesh. For this end in the view, some specific objectives were fixed to perform:

1. To identify the key indicators and institutional barriers affecting the planning and managing development projects.
2. To unveil the institutional framework of project planning process.
3. To summarize the obstacles and propose strategies for successful implementation of development projects.

RATIONALE OF THE STUDY

Bangladesh, as a symbol of least developing states, has inheritably been alienated with friendly foreign policy and holds geographical importance. It is a unitary self-governing republic. The president is head of the state. The legislature is replica of the British parliamentary system. Depending on the funds / or donations from her development partners, she is on the way of development to reach desired goals.

In doing so, the government has focused on planning and managing development projects which may facilitate the people of the country as soon as possible. This study is significant for the general people as well as politicians, bureaucrats, educationists, donors, nongovernmental organization (NGOs), and civil society.

Various factors are responsible for a corrupted mode of government (that is, traditional bureaucrats, unskilled professionals, centralized authority and power, lack of financial resources). A lot of research works on project management have been conducted in Bangladesh on either national or local level.

Unfortunately, no significant research is found regarding the challenges of planning and managing development projects in Bangladesh. It is also be momentous because it will also meet the academic demands as well as greater benefit of the society. It will attract policy makers, donors, NGOs, and civil society as well.

The issue of implementing development projects has received greater attention around the developing societies. Different countries have already adopted new laws and make regulations to conduct fair procurement and make these transparent and accountable during implementation phase of projects and some countries have in the pipe-line.

The study would be a reliable one for the government as well as bureaucrats, academicians, civil society etc. for making further research or other movements. It is relevant with the present status of planning and implementing development projects all over the world. In an age of globalization the study will open up a new door for all concerned to think about the matter. In addition,

conducting such a research in this specific area was both challenging and interesting, too.

DATA AND MATERIALS

The study has used the content analysis method in getting appropriate findings and in doing so, explanatory-descriptive research design was followed. It examined the affects of corruption at project planning and implementation phase and tried to find out the responsibilities of concern authorities in this regard.

Deductive method, theoretical approach used in social science study, was followed to get realistic findings which resultant from secondary data. The secondary sources of data was comprised the relevant documents and publications of government agencies, Ministries, web portals, different NGOs, Archive, library, education and research institutions and internet browsing has continuously done. The study was intended to represent the comprehensible picture of planning and implementing phases of development projects and duties of relevant authorities.

INSTRUMENTS AND MECHANISMS OF PROJECT PLANNING PROCESS

National planning of a country is an endeavor to reach the socio-economic goal of a country. There are some compulsory tactics to invent and put into operation of the plan. In Bangladesh at first the project planning is approved in National parliament, and then it is sent to National Economic Council (NEC). NEC finalizes and approves the plan and then it is launched to ECNEC for ultimate approving.

From ECNEC, the plan goes to Ministry of Planning which helps to formulation and implementation of policies and also reviews the impact on the economy. Ministry of Planning has four Divisions namely, Economic Relations Division (ERD), Planning Commission, Implementation Monitoring and Evaluation Division (IMED), Statistical Division and Bangladesh Institute of Development Studies (BIDS) is under Statistical Division.

National parliament

Although directions of planning in Bangladesh came from different political parties but through National parliament it is included in state framework. Planning data comes in parliament from different sources. The sources are including Election Manifesto, Statistical Division, Local Administration, Media etc. Each Government provides commitments of development activities to the people before election.

After election, this manifesto becomes the source of different project planning. Statistical Division conducts

survey to know various problems. Besides, Local Administration is an important source of information or problems of grassroots level. Local Administration is including Local Government and Local Self Government. Local Government level employees are Government nominated and Public Representatives are in Local Self Government Units. They provide information on local problems and of local people. They provide reports to Planning Commission. Besides, other sources including Research organizations, Research reports, Transparency International Bangladesh, Bangladesh Institute of Development Studies (BIDS) etc.

Composition of National Parliament is including Speaker as Head of Parliament. Prime Minister is Head of Parliamentary functions. The National Parliament is composed of 345 Members; among them 45 are auxiliary Members (Reserved for Women). Parliament shall appoint from among its members the following standing committees: (a) a public accounts committee; (b) a committee for privileges; and c) such other standing committees as the rules of procedure of parliament require (GoB, 2009).

National Parliament is highest planning determining authority in Bangladesh. It determines the policy of Government and provides directions to planning in the country.

National economic council

The National economic council (NEC) is the apex authoritative body of the nation and premier political authority to make plan (MoP, 2010). Prime Minister is the main authorized person of this council and Members are Ministries of the council of ministers (MoP, 2010). Other supporting Officials are including cabinet secretary, Governor of Bangladesh Bank, all members of Planning Commission and Secretary of Concerned ministry or Division.

NEC provides overall supervision at the stage of Five year plans, annual development programmes and economic policies. It finalizes and approves plans, programmes and policies. It also reviews of how the development projects are implementing properly. It can take different decisions or dealings that may be considered necessary for socio-economic development of country. It gets authority to appoint committees as deemed fit to support the NEC in due expulsion of its responsibilities. NEC arranges meetings in every month and this meeting can be held earlier if required. NEC also gets clerical service from Planning Division.

Executive committee of the national economic council (ECNEC)

ECNEC is the supervisory agency for implementation of the policies decided by National Economic Council

(NEC). It is the uppermost level in the nation, which approves the individual project and is the definitive approving authority. It has authority to review the projects that are reported by Implementation, Monitoring and Evaluation Division (IMED). Work art of the council committee is composed of prime Ministers and ministers of different Ministries and they are foremost managerial members of the Committee (MoP, 2010). Besides, there is other underneath Officials to support the managerial body.

The superior level members are including Prime Minister who is the head of the Committee and substitute Chairman is Minister, Ministry of Finance. Other members are Ministers of different ministries including, Ministry of Planning, Ministry of Agriculture, Ministry of Labor and Employment, Ministry of Water Resources, Ministry of Commerce, Ministry of Communication, Ministry of Shipping, and Minister or State Minister of the Concerned Ministry. Along with managerial body, there are also other supporting officials for providing all time support to superior members. They are including Secretaries of different divisions and members of planning commission.

The supporting officials are including Cabinet Secretary, Principal Secretary or secretary of Prime Minister's Office and other secretaries of Economic Relations Division, Finance Division, Planning Division, Implementation, Monitoring and Evaluation Division (IMED) and Secretary of Concerned Ministry or Division. Along with them other members are as well as Members of General Economics Division of Planning Commission and Programming of Planning Commission.

As the ECNEC is the topmost level in the nation for approving the projects, it does also many important functions for project development. For all investment projects ECNEC deems and grant Project Concept Papers and also Public Sector Projects having investment expenses of above 25 cores with proposal of Project Evaluation Committees (PEC) meeting (MoP, 2010).

IMED provides progress report of development project implementation to ECNEC for evaluation. It is authorized to regard as the plans for investment companies as private or joint ventures or with overseas participation. ECNEC scrutinizes the economic situations and appraise overall act of the economy and related strategy issues. Financial outcome or performance of statutory corporations is also considered by ECNEC. It judges rates, bills and costs of civic usefulness services or manufactured goods of Public Enterprises.

ECNEC get a hold power to regard as and support yearly target of foreign aid, expansion of buy and sell, sell to other countries of manpower as well as to appraise the advancement of the annually intentions.

ECNEC organizes meeting as and when necessary. Planning commission makes available services to this Committee.

Ministry of Planning

Ministry of Planning plays an imperative role in planning and development related policy making practice. Planning Minister is chief of the Ministry. Planning Ministry is composed of Planning Division, Economic Relations Division, Planning Commission, Implementation, Monitoring and Evaluation Division (IMED), and Statistical Division.

Planning Division

The Planning Commission is headed by a Secretary to the Government. There are three wings under Planning Division namely, Administrative Wing is headed by Joint Secretary, ECNEC Wing is chaired by Joint Chief and Statistics Wing is directed by Joint Secretary (MoP, 2010). For economic and social development Planning Division prepares National plus-annual, mid-term development plan, three year systematic plan and perception plan.

Within the framework of National Plan this division prepares annual development programmes and originates policies for the accomplishment and impact of the financial system. It sporadic assesses national development plan and foundation of the prepared performance of the diverse segments of the economy. It continuously watches the steps forward of plan achievement and appraise the arrangement.

Planning Division carries out revise on main economic issues and develops essential economic procedures and measures. It weighs up of exterior liability and on the basis of it presents the statements.

In order to get successful planning and growth Planning Division undertakes and promotes economic investigation, inspection and inquiry. It provides services of assessment of project formulation delivers guidance on programs and projects. It reviews whether the project can achieve the expected improvement and if not, identifies the complexities and suggests clarifications. It makes co-ordination of interconnected and mutually dependent activities of different Ministries or Divisions and their agencies and also bringing together the economic policies which are concerned with more than one Ministry or Division. It deals with all matters relating to statistics including endorsement, upgrading and harmonization of statistics and abolition of doubling-up endeavors within statistical ground. It performs cyclic investigations on population, cultivation, domestic animals, industries and set up statistics pool. It makes available services for the National Statistical Council and Standing Committees on National Income Commission etc.

Economic relations division (ERD)

ERD drums up the outer resources for socio-economic

development of the country. The main focus of the ERD is to manage, plan marshal and settle on allotment of external assistance in relation to the country's development programme priorities.

Secretary is Chairperson of ERD and other members are including Additional Secretary and 5 Joint Secretaries. Secretary reports to the Ministry of Planning of Bangladesh. Additional Secretary is billed a part of business. Joint Secretaries are in charge designed for Wings of ERD and account unswervingly to the Secretary of ERD. The Economic Ministers and economic Councilors posted in some important countries also reports to ERD Secretary (Chadha, 1989).

According to the allocation of business among the different ministries and Divisions (Schedule 1 of the Rules of Business, 1996) the functions of ERD are including to implement the development projects under Annual development Plan and Five Year Plan. ERD is authorized to review, rally, consult and deal out all many-sided and two-sided economic aid. For provision and detection of sources it checks and pores over scheme of foreign aid usual from the Ministries or Divisions. In relation to food and commodity assistance from multilateral and bilateral sources ERD activates, confers and deals out the external aid.

To approve of all procedural supporting agendas, ERD matches up and practices them. Matters that are relating to Bangladeshi national specialists and advisors in supported projects, ERD pacts with these policies and harmonizes them. It furthermore compacts with the documents and formulas meant for selection of expatriate mentors and methodological assistance professionals. It provides directions and dealings of how to tender the finance provided under external help and in addition raises dexterity, appraise, and screening of the use of overseas aid. ERD works with International Development Agencies like: World bank/IDA and IFC, Asian Development Bank (ADB), United Nations Development Program (UNDP), Islamic Development Bank (IDB) etc.

Planning commission

By means of the planned development for the country, the Bangladesh Planning Commission was established in January 1972 (Chowdhury, 1988). One of the first decisions the Bangladesh Government made after recurring from exile was to set up the Planning Commission and to assign the Deputy Chairperson and members of the Commission in 31 January, 1972. The cabinet decision in establishing the Planning Commission laid down ten functions for Planning Commission. The Prime Minister is the Chairman of Planning commission.

The Minister of Planning is the Vice-Chairman of the Commission. By the side of the policy level, the Commission consists of Vice Chairman and five members (Chowdhury, 1988). The member secretary of the

commission is the secretary of Planning Division.

Under the members, there are six divisions which are further sub-divided into thirty functional wings. Among them two divisions contracts by way of the setting up ad guiding principle questions of the diverse segments of the economy. Bangladesh Civil Service (BCS) Economic cadres are officials of Planning Commission governed by Planning Commission.

Divisions and Wings are headed by Joint Chiefs. Wings are again subdivided into Branches and headed by Deputy Chiefs and Desks are operated by Senior assistant Chief or Assistant Chief of the Planning commission. As the innermost organization of the country, the Planning commission gets ready of the short term plan, mid-term plan, long-term plan, annual development plan, five year plan and perspective plans.

At policy level, it decides the targets, intentions, main concerns, tactics and policy measures for development plans. It makes out the role of different economic sectors is mandatory to practice in the framework of the plan intention. Planning commission invents faceted resource allocation for programme planning. For implementation of the sectoral plans it judges investment resolutions of scheme. Planning commission evaluates how the mission implementation has an impact on people's living standard. It has institutional relationship with NEC/ECNEC, Finance Division, Economic Relations Division, Internal Resources Division, Planning and Development Academy, Bangladesh Institute of Development Studies, Implementation Monitoring and Evaluation Division, Development Ministries or Divisions and Statistics Wing or BBS.

Implementation Monitoring and Evaluation Division (IMED)

IMED is the inner and climax institution of the country. Project implementation bureau (PIB) was created in 1975. It was renamed as implementation monitoring and evaluation division (IMED) in the early 1980's under Ministry of Planning (Majid, 2008). IMED is ordered into 8 Sectors/Wing/Unit. They are headed by Chief Joint Secretary/Director Generals. They account to the secretary.

The Secretary works under the supervision and order of the Advisor/Minister for Finance and Planning. These Sectors/Wing/Unit are including agriculture, rural development and research sector, industry and power sector, communication and local government sector, education and social sector, co-ordination and MIS (management information system) sector, evaluation sector, central procurement technical unit (CPTU) and administration wing.

The Rules of Business of the Government allocated the functions of the IMED. They are including to scrutinize ad assess the implementation of development projects

included in the Annual development Programme (ADP).

For information of the President, NEC, ECNEC Ministries and other concerned, IMED accumulates and assembles the project judicious data for preparing quarterly, yearly and monthly progress report. It provides different advisory and consultancy services to Ministries/Agencies which are relating to implementation of project. It conducts field inspections of project implementation for identifying the problems and reports to the President and Concerned Ministers. It deals with different matters related to central procurement unit (CPTU) and Public Procurement Regulations (2003). Besides it also does such other functions that prime Minister assigns to the Division from time to time. IMED plays a vital role in project formulation to project implementation.

Statistical division

It is solitary of the four administrative divisions of Ministry of planning. For accurate plan formulating, supervising and appraising of project, statistics or statistical data is most imperative. By understanding the substance of data, in 1975 Statistical Division was established under the Ministry of Planning. Its head is the Minister of Ministry of Planning.

There are 6 offices under Bangladesh Bureau of statistics and National Statistical Office. They are the applied administrative units of the statistical Division. In order to provide information on administrative and management related matters there are total 36 Statistical and semi-Statistical Centers at Ministry, Department, agencies and autonomous Bodies.

Each division is independent secretarial unit and head is director. Besides, the organizational structure of Bangladesh Bureau of statistics is spread over the Zilla, and Upazilla level.

In general, this division provides support to Bangladesh bureau of statistics at the ministry level and national statistical council at national level (Chowdhury, 1988). It puts forward the report of statistics on project to Ministry of Planning.

Bangladesh Institute of Development Studies (BIDS)

BIDS is a self-governing unrestricted multi-disciplinary public Research organization for conducting policy research taking place the development issues designed for Bangladesh. The history of Bangladesh Institute of Development Studies (BIDS) can be traced back to the Pakistan Institute of Development Economics (PIDE) which began in June 1957. Up to 1973, it retained the name Bangladesh Institute of Development Economics (BIDE). Afterward, a parliamentary charter was granted in 1974 and the Institute was renamed as the Bangladesh Institute of Development Studies (BIDS). The institute

operates under the institutional control of the Ministry of Planning (Planning Division).

A Board of Trustees governs the BIDS where the Planning Minister is Chairperson and Director General is the Chief Executive of the Institute. There are three legal committees for providing the supports to this institution. These committees are namely, The Policy Coordination Committee (PCC), The Administrative Affairs Committee (AAC) and The Finance Committee (FC).

In the field of development economics, BIDS carries out and upholds study, investigation and diffusion of facts. It provides assistance in planning by accumulating information, carrying out inquiry and undertaking research projects. In order to accelerate the use of up to date technology in project, it supplies training amenities.

BIDS makes policy debates on key policy concerns to civil society and other stakeholders and upholds comprehension, consideration and accord on policy schema. It arranges practicum, discussion groups, and symposiums to excite the interface with the research community, policy creators and civil society in order to split research results on the BIDS comprehension base.

Committee system in project planning

There are a number of committees for project planning at the agency level, ministry level and national level. They are including Project Evaluation Committees (PEC) in Planning Commission for examining Planning Proposals and advocating them to the Minister-in-Charge of Planning or the ECNEC for their sanction, Departmental Project Evaluation Committee (DPEC) at Ministry/Division to deem 'A' type projects guaranteed by itself or any of its agencies, Special Project Evaluation Committee (SPEC) at Planning Commission to appraise the Technical Assistance (TA) Projects and Departmental Special Project Evaluation Committees (DSPEC) at Ministry/Division level to propose suitable.

CHALLENGES AHEAD TO PLANNING AND MANAGING PROCESS

Following the independence of Bangladesh, corruption is not a new-fangled incident in Bangladesh. Political and administrative elites have often predestined the high incidence of corruption. It was believed that the return of democracy during the 1990s, government has been able to take effectual action to tackle the corruption to flourish. The World Bank estimates that 2 to 3% of GDP growth is lost to corruption each year. Per capita income could double if the government restrained corruption (Transparency International, 2009). The business community has been putting continues pressure on the governments though they are largely benefited from it.

Unfortunately, maximum portion of the tax payers are

common people, especially the poor, who have basically had to pay for it. According to transparency international, Bangladesh has improved its ranking in the much-talked about Global corruption perception index, moving up to the 13th position from the 10th in 2008, although political and bureaucratic corruption is still believed to be rampant (The New Age, 2009).

The government formed a number of oversight regulatory bodies to check corruption like the Anti-Corruption Commission, but most of the bodies could not function effectively. The Public Procurement Regulation was enacted, but the government plunged into corruption flouting the regulation.

During the last few decades, corruption, terrorism and mismanagement in the public purchase are the common scenario. Mistreatment of development projects in absence of a uniform law contributed largely to the situation. Although restricted tendering method or direct procurement method can be used for some specific reasons, procurement and contracts in Bangladesh often take place through open competitive biddings (Islam, 1993).

Bangladesh, newly admitted democratic values, has failed to prepare code of conduct, ethics, and issues of conflict of interest according to priority. Information on direct and indirect corruption were retrieved from documents accessible mainly on newspapers, electronic media, electronic databases, literature survey, on websites of specialized agencies, and analysis of the existing situation in Bangladesh.

Various footprint reports of political involvement in wide-ranging corruption, political control and pressure from trade unions in the development activities are already published. Occurrence of corruption involving donor agency are not uncommon at nationally or globally and or other levels. The inefficiency and ineffective public administration is not accountable, somewhere, they are directly involved, which is an integral part of poor governance.

Development partners of Bangladesh are suffering from such corruption (belonging to the WB, UN peace keeping operations, UNDP, UNICEF and other concerned agencies) whether or not in conspiracy with local counterparts and concerned others. The Department of Institutional Integrity (INT), an anti-fraud wing of the World Bank, has traced that the members of a government are involved into the fraudulent bids of the Roads and Highways Division.

In addition, INT scrutinizes claims of corruption such as bid exploitation; bid collusion; coercive power practices; deceitful bids; contract performance etc. Identical corruption accuses were in pipe-line to be proved in different ministries-Ministry of Health and Family Welfare, Ministry of Communication, Ministry of Water management, Ministry of Social welfare etc.

The procurement process in development projects is far from satisfactory level, due to the following problems:

politically motivated advertisement, a little bidding period, underprivileged specifications, nondisclosure of selection criteria, award of contract by lottery, one-sided contract documents, negotiation with all bidders, rebidding without adequate grounds, other miscellaneous irregularities, and corruption and outside influence.

The contracts of development activities are particularly known for long delays in the award of contracts. Implementation monitoring evaluation division (IMED) compiled data on the elapsed number of days from bid invitation to award in 148 procurement cases in FY98. The normal time allowed is 150 days. The review showed that the awards were made in 240 days or less in only 29% of the contracts; another 28% were awarded within a year, and the rest took 500 days or more (TIB, 2009). Procurement delays increase costs, defer benefits, deter good firms from bidding and are often indicative of corrupt interference (TIB, 2009).

Furthermore, conventional planning approach is used till now in planning process. Planning process is generally top-down where people participation is restricted and planners are often ignoring the sensible difficulties and claim of people. Planners are very much interested in establishing 'Super structure' in urban areas without taking into account trouble situation of rural areas. Although people are the main target of development planning but in plan formulation there active involvement is not accessible.

At local level, planning people participation is not so accelerated because of their unconsciousness and power of local elite (Hasan and Hossien, 1999). Generally, urban based planning is given more importance than rural planning. Planning commission is not so interested to study the rural problems so there is still, urban picture on planning paper. People only get the conveniences but not in formulation stage. All programmes are bureaucratically conceived, bureaucratically implemented and bureaucratically evaluated.

Project planning formulation is too much depended on foreign aid because of lack of our internal resource. The key part of revenue budget is received from import tax (33%) and this import is depended on foreign support. Foreign aid depended planning cannot bring any optimistic impact in any country as through this aid the donor countries receive their interest. Rough political circumstance seriously hampers the successful implementation of projects. There is no surety on continuity of the project as it may be rejected by the next ruling Government. Hence, the development policies cannot be implemented as it should be.

There is common problem in picking and implementing the national and international development projects in Bangladesh (Ahuja et al., 1994). Projects are taken for public that typically not serve up to them. There is strong commitment of during formulation of development project to improve the fate of ordinary people.

Nevertheless, the achievement of the projects can not

be reached to those people. Proper implementation of project can be hampered for reforms in planning paper. As a result there is wastage of time, resource and worth.

In plan formulation generally, the needs of deprived people is disregarded. For their development it is necessary to bring reforms in land distribution, business, and production and levy which will not serve the interest of affluent persons. So, the elite groups can obstruct the poor based planning. Organizations in relation to project planning are not so efficient to execute the development planning properly. Their administrative efficiency suffers most from corruption, nepotism, technological problem, skilled staffs and too much formality.

Planning commission and other agencies have less sovereignty power in relation to project formulation and implementation.

ENDING REMARKS AND PROPOSED SUGGESTIONS

Strengthening a corruption free Bangladesh is now demand of the age and people. Bangladesh is now ready to set examples in areas of anticorruption movement in development projects and other social corruption as well. The government has taken initiatives to reduce per unit costs of products of development and capitalize on per unit quality and quantity of products at least for the sake of hungry and poor people of Bangladesh.

Relaxation of prerequisite of the bidders in development activities and allowing "single-stage two envelop" scheme in submitting proposal and e-Lottery to choose a contractor will strain corruption. It's rational to expect from the law making authority to amend the law in such way, which would not re-open the door of corruption.

When the country is marching ahead for achieving "Digital Bangladesh", launch the scheme of submitting the tender over is great thought. World Bank however, suggests that deregulation and growth of markets, public deals, legal and judicial reform and transparent management are important to reduce corruption even when government plays a role in policy formulation.

This paper is an attempt to enlighten how the planning machinery moves toward indeed. It is an effort to provide the information on how they function in relation to the rest of the governmental machinery and decision making process and difficulties from which the machineries suffer most. Development planning and policies encompasses not only the economic but also socio-political and administrative factors (Islam, 1993).

As a third world developing country, Bangladesh requires to put into practice the development planning for socio-economic development of the country. Public oriented, practical and efficient planning is being obliged to reach at this expected aspiration. The plan formulation and implementation process should serve the interest of common people not the elite group and donor countries. Project planning is national issue not the political. So

without reducing the politics of project planning no expected target can be attained. Although it is complicated to solve the troubles which are stated in Bangladesh, but appropriate efforts will make possible it. The ways to solve the problems in planning in Bangladesh may be dividing into three types. The short-term measures, the mid-term measures and the long-term steps. The government should consider this paper for its specific future strategies.

Short-term measures (From 2 to 6 months)

- I. Ensure transparency and accountable commitment system and leadership process;
- II. Planning commission and other agencies should practice the autonomy and identify the projects without considering the external pressure and influence of benefactor agencies;
- III. Action based project need to give priority; and
- IV. For the period of undertaking the planning it is imperative to make confirm of source of money, ratio of national and global resource so that the modification of planning would not be required.

Mid-term measures (from 6 months to 2 years)

- I. Ensuring participation of local people as well as the women;
- II. For increasing administrative efficiency, bureaucratic complexity, corruption, and nepotism have to be strongly diminished;
- III. Accountability, administrative reforms, training programs, sufficient allocation of resources and public awareness on planning are furthermore crucial for plan formulation and completion; and
- IV. Our local Government bodies at village, union, Thana and Zilla level should make delegate and self sufficient so that they can carry out the hope of people. Identification of local resources, demand, priorities can accelerate the planning. Co-operative and social village, union and Thana based development plan have to be building up and Thana level planning should be basis of Zilla level planning.

Long-term measures (continues)

- I. Utilizing the internal resource and reducing the dependency on foreign aid;
- II. Besides, people should become conscious in savings, reducing the consumptions and encourage the small investment to swell our internal resource;
- III. Planning, Implementation and Monitoring (IME) Department can be established at the Zilla and Thana level. There in addition can be set up Planning

Commission; and

IV. Political co-operation is key prerequisite of any development. There should have mutual co-operation between major political parties in development issues by considering people welfare.

Conflict of Interests

The author(s) have not declared any conflict of interests.

REFERENCES

- Ahuja HN, Dozzi SP, Abourizk SM (1994). Project Management: Techniques in Planning and Controlling Construction Projects. New York: John Wiley and Sons, INC, Third Avenue. http://books.google.com.ng/books/about/Project_Management.html?id=342g6CSnofUC&redir_esc=y
- "Bangladesh Goes up to 13th Place in TI's Corruption Index: Procurement." (2009, November 18.) The New Age; [On-line] Available at http://www.mediabangladesh.net/en/index.php?option=com_content&view=article&id=739&Itemid=1 (Accessed on February 17, 2010).
- Chowdhury S (1988). Project Management. New Delhi: TATA McGraw-Hill Publishing Company Limited.
- Chadha S (1989). Managing Projects in Bangladesh: A Scenario Analysis of Institutional Environment for Development Projects. Dhaka: University Press Limited. <http://catalog.hathitrust.org/Record/002215801>
- Cleland DI (1999). Project Management: Strategic Design and Implementation. New York, San Francisco, Washington D. C.: McGraw-Hill international Editions. <http://accessengineeringlibrary.com/browse/project-management-strategic-design-and-implementation-fifth-edition>
- Dean BV (ed.) (1985). Project Management: Methods and Studies. New York: Elsevier Science Publishers B. V. P. XI. <http://trove.nla.gov.au/work/18855401?q&versionId=44565542>
- Government of Bangladesh (2009). The Constitution of People's Republic of Bangladesh. <http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN014593.pdf>
- Islam N (1993). Development Planning in Bangladesh: A Study in Political Economy. Dhaka: the University Press Limited.
- Bangladesh Transparency International (TIB) (2009). "Governance, Structural Adjustment and the State of Corruption in Bangladesh." [Online] Available at <http://www.tibangladesh.org/docs/muzaffer/muzaffer.htm>.

Citations

- Hasan M, Hossien AM (1999). Parikalpana o Pranayan. Dhaka: Gatidhara. pp. 91-124.
- Majid MA (2008). Monitoring, Evaluation and Sustainability, Pally Karma Shahayak Foundation (PKSF).
- Ministry of Planning (2010). Report on Bangladesh Development. Dhaka- BG Press.

Full Length Research Paper

Methodological issues in estimating and forecasting health manpower requirement

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Human resource is one of the most important components of health systems. Support for human resources planning for health ranks low on the health policy agenda of many national governments and international agencies. The aim of this study is to present various existing methodologies for estimating the health manpower requirement and forecasting approaches and to discuss some of the methodological challenges, their potential advantages, limitations and indications for their use. The most common approaches which were used for estimating man power requirement are health needs based, demand based, service targets based and health manpower to population ratio. These approaches use different assumptions and require distinct data sets for estimating requirement of human resource for health. Depending on need, health planners have modified four basic methods described above, and developed an alternative approaches for estimating as well as forecasting health manpower requirement and some of them have been discussed in details. Estimating the requirement and forecasting the health manpower is the most difficult but essential task for planners. Any assessment of the optimal number of health manpower, regardless of the specific method used, is bound to have a large range of uncertainty. Hence, any country considering requirement and forecasting of health manpower can deviate from intentions in either direction. The main concern must be to have the right number and appropriate mix and distribution of health manpower to provide quality health care service to achieve positive health outcomes.

Key words: Methods, estimating health manpower requirement, forecasting health manpower requirement, human resources for health, health work-force

INTRODUCTION

Human resource is of the critical components of health. To bring about the required changes in health outcome, health planners and decision makers have to ensure that the optimum number of health manpower is competent,

at the right place and at the right time to deliver health services for the population needs, at an affordable cost (Hornby et al., 1980; Dreesch et al., 2010). Public spending on the health workforce accounts for 35 to 45%

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of government health expenditure in the Asia Pacific Region (The World Health Report, 2006). Despite the large spending, and the acknowledged importance for producing good health and confronting health crises, support for human resources planning for health ranks low on the health policy agenda of many national governments and international agencies (Narasimhan et al., 2004; http://www.wpro.who.int/NR/rdonlyres/7C707E26-2A31-4A6B-94A7-A3D484331061/0/16_Chapter11Healthresources.pdf). Even if an attempt is made for planning, they are grossly insufficient. This may be because of limited awareness of what manpower planning is and how it is done (Hornby et al., 1980).

Planning human resources for health is the process of estimating the required health workforce to meet future health service requirements and the development of strategies to meet those requirements (Roberfroid et al., 2009). However, the most difficult yet important aspect of health manpower planning is the estimation of requirement or demand (Hall and Meji, 1993). The process of estimating health manpower requirement is complex, and needs consideration of policies and diverse interests of different groups. Without clear understanding of methodological issues for estimating requirement of health manpower, whatever approach adopted for estimating the requirement will contribute little to health system. The area which needs to be studied is replacement demand. It is also to be noted while forecasting for the future demand for manpower (O'Brien-Pallas et al., 2001). The purpose of current paper is to present existing methodology for estimating the health manpower requirement and forecasting approaches and to discuss some of the methodological challenges, their potential advantages, limitations and indications for their use.

Factors influencing health manpower requirement

Several factors influence requirement of health manpower and many of them are not under direct influence or control of health sector. All are important, yet their relative importance in planning differs depending on approach used for estimating the requirement, nature of health system, and the manpower category being considered. Demographic factors like size, distribution, density, age structure, growth rate and sex ratio are most important affecting the requirement of health manpower. The demand of the health care is directly associated with the disposable income. In government setup the services are mostly free, therefore waiting time, quality of service and other such will affect the utilization of health services and consequently health manpower requirement (Hall and Meji, 1993). Educational level and awareness regarding health will directly affect demand for health care and thus will influence health manpower requirement. Health status of population is supposed to inversely relate to health demand but in reality is not very evident in the population

because of the strong relationship between socio-economic status and demand for health services. Other determinants affecting utilization of health services and consequentially affecting health manpower requirement are accessibility to health services (travel time and waiting time at health facility, convenience of appointment, the cost, eligibility for care, social and cultural barrier), resource availability, resource productivity and health care technology (Dreesch et al., 2010; Roberfroid et al., 2009; Hall and Meji, 1993).

Estimating requirement for health manpower

The logical sequence for estimating the requirement of health manpower includes assessment of current situation, data collection and analysis, definition of objectives and conversion of health goal into services and services to manpower. Four basic approaches proposed for estimating manpower requirement are health needs based, demand based, service targets based and health manpower to population ratio. These methods use different assumptions and have different data needs in order to estimate requirement of human resources in health sector (Hornby et al., 1980; Dreesch et al., 2010; Roberfroid et al., 2009; Hall and Meji, 1993).

The first three convert people to health service they need based on certain assumptions and health services are then converted to manpower required to produce those services. In fourth approach, people are directly converted to health manpower. The health need and service target approaches are normative, whereas the demand based approach is predictive. The normative approaches are useful if the government is proactive and have stronger control on health care delivery system and intend to take active role in shaping future development (Hall and Meji, 1993). The predictive approach is used in situations that anticipate future development without necessarily modifying them significantly (Hall and Meji, 1993; Dreesch et al., 2010). Thus estimation of number of health manpower needed will be determined by specific method adopted for estimating the requirement, as each looks differently how the health sector functions and what are the forces that control health sector (Hornby et al., 1980; Hall and Meji, 1993).

The health need based approach also called epidemiological approach seeks to find out what health service people actually need to keep them healthy. The need is defined usually by experts as number of workers or quantity of services necessary to provide an optimum standard of service and to keep the population healthy. Health service users are not involved in determining need (Roberfroid et al., 2009; Hall and Meji, 1993). Health needs to be distinguished from health wants, which reflect the service people desired, even if the professionals do not consider it necessary (Hall and Meji, 1993). This model needs information on the health status

of the population with disease prevalence, demographics and appropriate standards of care. The three major assumptions used in need based models are that all health care needs can and should be met; cost-effective methods of addressing needs can be identified and implemented; health care resources are used in accordance with relative levels of needs (Roberfroid et al., 2009; Sirikanokwilai et al., 1998).

The demand based approach also called as requirement model or the utilization based approach examines the quantity of health care services demanded by the population. The demand is defined as amount of the various types of health services that the population of a given area will seek and has the means to purchase at the prevailing prices within a given period (Roberfroid et al., 2009). Current health service utilization rate is a good measure of met demand; however, for estimating the requirement the planners must also consider the unmet demand, with certain assumption about their cost and accessibility. The population characteristics considered in this model to estimate demand could be age and sex, existing market conditions, institutional arrangements, access barriers and individual preferences. The demand can be estimated in three ways. First, from data on current service utilization, second by projections from workforce to population ratio based on the service need per unit of population and forecasting population scenario and third, assessment can be based on current and future social, political and economic circumstances, and how users, providers and employers will behave as a result of those circumstances (Roberfroid et al., 2009). The approach assumes current health manpower level and their distribution suitably met the demand for health care; the requirements of resources to met demand remains constant in the future; and the current demographic trends predict the future population changes (Roberfroid et al., 2009; Sirikanokwilai et al., 1998). The health need determined by experts and quality of health services is of secondary concern in this method (Hall and Meji, 1993).

The service target approach identifies targets for production and delivery of the various kinds of health services based on diverse criteria of health need, feasibility, economic demand, consumer want, and population to manpower ratio. These services are then converted to manpower needed to meet them. Components of each health activity are considered discretely for fixing service targets; therefore this approach is also called as microanalytic. The key focus is service provision, and not manpower, therefore more popular among policy makers. This approach can outline the future changes rather than just predicting them. The principal assumptions for this models are that the public health system takes active role in development and it seeks a good balance between what population needs and what they want, what technology can offer, and what society can actually deliver at any given point in time (Dreesch et al., 2010;

Hall and Meji, 1993).

The manpower to population ratio approach uses desirable or empirical ratio, based on diverse criteria. Such ratio can either be used as the primary technique for estimating requirement or it can be an outcome of calculations carried out in relation to one or other method. This approach needs population projections. Because of low cost, simplicity and easy to implement, this approach is commonly preferred by planners. However, the serious limitation is that it hardly considers how the health sector functions; it does not regard demand and supply balance as well as development and productivity, distribution of health manpower; and finally it runs at very high risk of selecting inappropriate ratios, which may have a serious policy implications (Roberfroid et al., 2009; Hall and Meji, 1993; Goodman et al., 1996).

Depending on need, health planners have modified four basic methods described above, and developed an alternative approaches for estimating as well as forecasting health manpower requirement. Some of these approaches are discussed below.

Supply projection approach also called trend model is almost similar to demand based approach, except that the number of physicians required to match the current services given are based on likely changes in the profession rather than demand. This approach relies on physician-per population ratio and takes into account health care services currently delivered by the total pool of practicing physicians. The assumptions are almost similar to demand based approach, that is, the current level, mix, and distribution of providers in the population are adequate, the productivity of providers remain constant in future; and the currently observed trend predicts the size and demographic profile of the providers over time. There is a scope to factor in the model the possible changes in demography and the health care delivery system and to consider the professional productivity and skill mix. However, these adjustments add to considerable complexity to the model. The important limitation is that calculations are not based on the population health needs. This approach was used in many developed countries (Roberfroid et al., 2009; Sirikanokwilai et al., 1998).

Modified population to physician method first projects the future population after adjusting for deaths due to prevalent diseases. Different scenarios could be developed considering the variable growth rates of the region or country. The most appropriate growth rate scenario can be considered for estimating requirements. Later on the population to physician ratio is estimated taking into account the health care system of country and the future economic status and adjusted by adjusted global ratio. This is done by plotting the relationship between the population to physician ratio and GDP per capita. The World Bank development indicators are generally used for this purpose. By dividing the estimated population by the future population to physician ratio, future physician

requirement can be estimated. This approach was used in Thailand to project further requirement of physicians (Goodman et al., 1996).

Managed care approach relies on identifying health plans that are implemented in regions or countries that are similar to target country in their demographic and health profiles but are markedly different in their costs and deployment of health care resources. There is a possibility of obtaining the most reliable estimates because it reflects actual staffing patterns in countries that are attempting to use physicians efficiently with emphasis on productivity. Regions or countries that provide the optimum standards of services with modest number and mix of health manpower are considered as benchmark and these are used as a current best estimate for planning. Therefore this approach is also called benchmarking. The limitations of this method are that it assumes that the current staffing patterns as appropriate for the future, ignoring technological advances or any other changes in medical practice; second the staffing patterns vary considerably across managed care organizations; and the third the extrapolation methodology used in the approach. Therefore while extrapolating; adjustments are necessary for important variables that can affect the manpower requirement. This approach was used in Australia and USA (Adams and Wood, 1990; WHO, 1990).

Adjusted service target approach considers the appropriate service targets for estimating the requirement established by critically studying the current level of health services. This was further adjusted to reflect expert opinion on the standard norms of care within the known environment. The approach was used for estimating physician requirement in Canada. Important imitation of this approach is that it addresses only the physician requirement without considering the appropriate mix of manpower or potential substitution between health professionals (Peterson et al., 2004).

Modified need based approach was used in the United States in the early 1980s, by the Graduate Medical Education National Advisory Committee (GMENAC). The model used epidemiological evidence for each specialty, modified by professional opinion on the need and appropriateness of care for various conditions. GMENAC asked panels of experts in various branches of medicine to reach a consensus on norms of care for each health condition and each medical procedure. Then the "modeling panel" attempted to reconcile the resulting need estimates of the expert panels. The modeling panel further "adjusted" the expert estimates to take account of "economic, social, and behavioral constraints." The model was adjusted for incidence rates of specific conditions; percentage of the population with that specific condition who should consult a physician; rate of commonly performed procedures; percentage of procedures that should be performed by a specialist; associated inpatient and office visits per procedure; and productivity estimates/

profile of weekly workload (Roberfroid et al., 2009). Major constraints identified in the GMENAC approach are use of the Delphi technique, the future role of non-physician providers, and a lack of reliable data (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1070178/pdf/hsresearch00034-0016.pdf>). This approach was also criticized for being unscientific and subject to considerable bias as too many judgments were required and the experts did not believe that anyone would have the information necessary to make informed judgments. Another limitation of this approach was its inability to anticipate advancements in technology, new drugs, and new diseases that may affect the demand for physicians (WHO, 1990).

Variation in demand based approach was used in India by Institute of Applied Manpower and Research. They used the variation of Health Demand method to project the likely demand of doctors in public and private sector during the fourth and fifth five year plans. The regression methods were used on the available historical data to develop coefficient. In public sector, it converts public expenditure into demand for government doctors and in private sector it could convert national income estimates into the demand for doctors in private sector. These estimates were then applied to estimates of the trend of national expenditure and income to derive the probable demand for doctors (Hall and Meji, 1993).

NTTP (need, service target, time and productivity) approach was proposed to estimate the human resource requirement to deliver interventions related to MDGs. The quantity of service was estimated for 33 priority health intervention recommended by the Commission on Macroeconomics and Health, which were advocated to address the burden related to MDGs three health related goals (Dreesch et al., 2010).

Coordinated health and human resource development approach was proposed by WHO as a more comprehensive and systematic approach. The focus is fundamental changes in the philosophy of planning towards the interdisciplinary and inter-sectoral planning (Angus et al., 2000). However, this approach appears to be more theoretical rather than practical particularly in the context of the public health sector reforms and more rapidly evolving private sector in developing countries (Dreesch et al., 2010).

Combination of supply and utilization based approach allows undertaking the performance gap analysis for future taking action to make physician supply match requirement. The assumption is that the base line ratio of supply to health care ratio is considered as appropriate and used to estimate future requirement (Song and Rathwell, 1994).

Effective demand based approach complements the epidemiological need based approach by the economic consideration. This approach considers population characteristics related to health levels and risks, service utilization and provider deployment patterns and economic,

social, contextual, and political factors that can influence health service utilization and health spending (Roberfroid et al., 2009).

Effective infrastructure approach is a need based model complemented with the infrastructure consideration. The rationale is that there is little point in having a workforce greater than the physical capacity of the health system to gainfully employ or use that workforce (Roberfroid et al., 2009).

Setting of standards

Regardless of the method used, reference standards are needed for calculating manpower requirement. These standards can be derived experimentally or empirically from the past or current experience, or they may be based on professional judgment, or international experience. Trend lines can be developed showing how manpower to population ratios, productivity and other indices have changed over time and these trend lines are extended into future for estimating manpower requirement. This approach of extrapolation of past trends in future is useful in countries with a relatively passive attitude towards the distribution of health care and rapid urbanization. Situation observed in the most favored region or part of the country can be used for standard setting. However, as long as the distribution and performance of doctors are uneven in the country, this approach will always yield the current inefficiency. Comparing and using standards of other country or countries or those proposed by WHO may be of use, but an important assumption is that within the period between base year and target year, the country under consideration will attain the level of development comparable to that now observed in the other country or countries. Comparing other countries with variable level of developments can improve an understanding about what we are likely to achieve and what are the main preconditions for the same (Hornby et al., 1980; Hall and Meji, 1993.)

Other methods that can be used for developing standards are task analysis and functional analysis. In contrast to task analysis, functional analysis has broader meaning and it includes analysis of variety of inter-dependent task that constitutes and an entire segment of the health program. The starting point for both analyses is to break down the various health activities into their constituent tasks and function, the smallest unit for analysis of relevant problem. Then minimally acceptable performance standards are developed for each task or if feasible for each function; and these standards are used for estimating the manpower requirement (Hornby et al., 1980; Dreesch et al., 2010; Hall and Meji, 1993).

The relatively new method for establishing standards for professional performances is Workload Indicator for Staffing Need popularly called WISN. In this method, the available working time per year is determined for all categories of staff. Later on the activity standards are set, which is then translated into standard workload. Using

this standard workload, manpower requirement is calculated. The Activity Standards for health staff are usually set by working groups of senior and knowledgeable staff with substantial experience of the work for which the standards are being set (Peter, 1998).

Supply of health manpower analysis

Although, the focus of this paper is on methodological issues in estimating manpower requirement, without a note on supply the discussion would be deficient; therefore some issues related to supply are briefly mentioned below. Imbalance between the existing level and current and future requirement of health manpower can be assessed by undertaking gap analysis. This can be done by finding out the current supply and estimating the adequacy of supply (comparing the current supply with estimated requirement). Supply usually refers to availability and characteristics of health manpower at a given time, or at a future time according to specified assumptions about prediction, losses or use (Hall and Meji, 1993). Supply analysis has three components; firstly current supply (includes active supply – employed or seeking employment and inactive supply – potentially able to serve), secondly is to find out probable addition in the supply and finally to estimate the losses or attrition in the supply due to various factors (Roberfroid et al., 2009; Hall and Meji, 1993). Attributes for health manpower supply analysis can be magnitude, training, information requirement, feasibility of government intervention, availability of traditional health manpower etc. Availability and accuracy of data is critical for supply analysis. Depending upon the manpower to be analyzed the data need has to be defined. The important realistic information needed for supply analysis are personal characteristics, training and other qualification required to perform task and job characteristics like location, timing, types and number of activities to be performed. There could be many sources of supply data, depending upon the country or region; however it can be categorized broadly into three heads as official sources, non official institutional sources (such as professional body or association) and primary field data by survey.

METHODOLOGICAL CONSIDERATIONS FOR PROJECTION OF HEALTH MANPOWER REQUIREMENT

Reliability of the models: Reliability is referred to as the capacity of a model to correctly project the health workforce deemed to be adequate at some identified future time. Models reliability can be explored by comparing how a set of models applied to the same setting and the same period produced matching projections (Roberfroid et al., 2009).

External validity of model: Different models used for

projection of health manpower requirement give very different results. Anderson et al. (1997) reviewed and compared three methods, namely managed care, demand-utilization based and adjusted need based, for estimating the requirement otolaryngologists in the United State. The number of otolaryngologists required as calculated by the three methods varied widely. The estimates of requirement ranged from 6611 (need based approach) to 8860 (demand based approach), nearly a difference of 25%. The authors observed that in each of the models, however, it was possible to show a shortage or surplus of physicians by altering one or more key assumptions. This suggests that any conclusion about the shortage or surplus of otolaryngologists must be viewed critically (WHO, 1990). One more study on projection of the required ophthalmologist in Ontario, Canada also revealed that the four methods they had used yielded different estimates. The physician to population ratio projected 489 full time equivalents (FTE), which was considerable different from utilization based method, substitution model, and need based model which yielded 559, 526 and 585 FTE respectively (Joyce et al., 2006). This difference in the projection of health manpower requirement using various models is due to the different assumptions used by these models (Roberfroid et al., 2009; Hall and Meji, 1993).

Internal validity: Whatever approach is used, estimate will not be exact numbers but instead a range of numbers. The three sets of parameters influence the models internal validity - the quality of data available, the plausibility of projection scenario and the comprehensiveness of the model and its adjustment for the confounding and interrelated variables (Roberfroid et al., 2009; Harris, 1986)

Retrospective analysis: It involves testing the reliability of forecasting models by analyzing the success of past projections either projecting or modifying the future, i.e. reaching a balance between supplies and requirements. However this is a difficult approach, as there is usually no or very little information on whether the target was effectively realized and even when the forecast proves correct, the perception of what is an adequate supply and demand ratio may change over time. Roberfroid et al made an attempt to test the realization of projected supply headcounts for Australia, Canada, and France and observed that there was a margin of error in all the projected physician headcounts, and the error size increased with the time lag between projection and assessment (Roberfroid et al., 2009).

Regression approach: Approaches discussed above for estimating health manpower requirement are fixed and based on the deterministic approach, and can lead to uncertainty in projecting the health manpower requirement. Even if few of them used adjustment for the future trends for prediction, it is limited to only few variables that determine the health manpower requirement.

Furthermore almost all the models lack the dynamic relationship between the inputs and health outcomes. The regression approach can be considered as one of the alternative way to address this issue. This allow for adjusting effects of various parameters to the supply and requirement of the health care professionals. One can also calculate the confidence interval around the point estimates. However the major limitation of this technique is to obtain the accurate data on determinants of the health service provision and utilization. Regression models can also be a basis of indirect standardization that can be used to identify the workforce imbalance (Roberfroid et al., 2009; Hall and Meji, 1993).

Sensitivity analysis and stochastic simulation: This is useful for predicting uncertainty in projections. In sensitivity analysis, a sensitive variable is one in which even slightest change in its input value result in significant change in the outcome. In stochastic simulation, the value of input variables is randomly assigned according to their probability distribution and the outcome of the projection will also be a random variable. This process is repeated until a large number of projections have been made. The mean and the variance of the projection's outputs can then be estimated, and the uncertainty of the projections can be quantified by calculating a confidence interval. Stochastic simulation method used information more efficiently and produced more reasonable average estimates and a more meaningful range of projections than deterministic sensitivity analysis. Sensitivity analysis and stochastic stimulation can enhance internal validity of models (Roberfroid et al., 2009; Persaud et al., 1999).

Selecting the most appropriate approach

Estimating the requirement of health manpower is generally carried out with narrow mandate of making quantitative estimates of supply and needs and then manipulating one or both of these to bring them into balance (Roberfroid et al., 2009). Health manpower requirements are area specific and their solutions must be adapted to suit the specific circumstances. Therefore, health manpower planning approach must be selected systematically, in the light of availability of facilities and resource and considering the basic and national characteristics (Hornby et al., 1980). Working group must be formed, which includes health service organization, medical colleges and universities, professional bodies and other interest's group. The group must undertake the situational analysis, as the type of method to be used depends upon the situation in the country. The working group needs to understand the Governments position on critical issues like long term demographic projection, health priorities and health resources.

Furthermore, for selecting the appropriate models for estimating the current and future requirement of health certain issues like: does a genuine political commitment exist in country to provide the minimum standard of health

Table 1. Potential advantages, limitations and indications for use of the four basic approaches for estimating health manpower requirement.

	Potential advantage	Limitation	Indication
Health need based approach	<ul style="list-style-type: none"> •Appealing, comprehensive and easy to understand •Logical and consistent with the professional ethics of providing service based on needs and not social and economic condition. •Potential of addressing the health needs of the population using mix of health manpower •Facilitates study of productivity, utilization and staffing ratio •Can avoid the perpetuation of existing inequalities and inefficiencies •Can include unmet need in estimation process •Encourage allocation of resources where they will have the greatest effect •Promote concern about quality of care •Facilitates cost estimation •Facilitates health team planning • Useful for specific programs 	<ul style="list-style-type: none"> •Complicated, costly and requires detail knowledge of the efficacy of the individual medical service for specific condition •Standard setting by professionals are frequently complicated by lack of consensus on optimum care and on health effect of care •May encourage the excessively detailed planning, and therefore likely to project unattainable service and staff targets well in excess of the countries' ability of provide them and/or in excess of consumer willingness to use them •Does not account for the technological developments and changes in the organization of health services, therefore it required frequent update with change in technology 	<p>Especially applicable to countries with:</p> <ul style="list-style-type: none"> •Sophisticated data systems, survey capabilities and planning capabilities •Relatively adequate health service delivery system •Active government policy towards dominant public sector with strong control over manpower and health service delivery •Particularly applicable to preventive, public health, and specific health programs based on well established technology, even in developing countries lacking statistical expertise
Service target approach	<ul style="list-style-type: none"> •Facilitates disaggregation of components of demand with most suitable method being used for each one •Facilitates study of productivity, utilization, staffing ratio etc since the emphasis is on production of services •Relatively easy, understandable and easy to interpret •Can access interactions between variables •Facilitates cost estimation •Easily usable with other planning methods •Facilitates health team planning •Future revision is possible as new information become available •Require modest data and planning capabilities. 	<ul style="list-style-type: none"> •Standard setting is likely to be more based on the desire rather than reality •Potentially unrealistic assumptions may be created •May encourage extensively detailed planning, especially for components of demand not subject to much control 	<p>Especially applicable to countries with:</p> <ul style="list-style-type: none"> •Dominant public sector with strong control over manpower and delivery of services and active government policy towards delivery of health services •Although useful for preventive and curative services, more used for the former •Most important for lower income countries.

care to all? Is the government primarily concerned about the demand originating from private sector or is it more concerned to the health need of population? Does the government have enough means, administrative, legis-lative and fiscal to enable to implement for anticipated changes in

policy? Does the country have the enough quality data and planning expertise to project the most accurate requirement? Is there adequate provision to implement likely accelerated changes, if any, compared to past (Hall and Meji, 1993)?

There is no single best method or mix of appro-

aches to answer these questions. What is needed is the combination of the method based on the current situations and use of the method that best suited to the specific aspect of health manpower plan. The matrix in Table 1 discussed potential advantages, limitations and indications for use of

Table 1. Contd.

	Potential advantage	Limitation	Indication
Demand or utilization based approach	<ul style="list-style-type: none"> •Facilitates understanding of dynamic and determinants of demand •Allows disaggregation of various components of demand •Tend to produce economically realistic projection due to little changes in population specific utilization rates •Probably result in good estimates of the minimum growth of demand likely to occur and ensure that the level of future satisfaction at least equal to that of present •Some variation of this approach are quite simple •May provide useful information for comparing the economic returns from training in health occupation, with those in other field •Can anticipate changes in health practice (e.g. new surgical technique or drugs) and in health system 	<ul style="list-style-type: none"> •Some variation requires extensive and sophisticated data. Very complicated and costly to calculate •May neglect political and societal reason for improving health services distribution and delivery •Does not necessarily take into account the quality of service or their relevance to the health problem of the country •May be difficult to interpret the rationale and result •Overlook consequence of errors arising from the assumptions proven to be invalid •Perpetuates current inequalities in utilization of health services •Assumes that any care is useful •Consider demand for mostly curative services •May produces a status quo since future population segments may have similar utilization rates as base year segment 	<p>Especially applicable to countries with:</p> <ul style="list-style-type: none"> •Dominant private sector (or for private sector planning) •Passive government attitude towards delivery of services •Relatively minor imbalance in the provision of service to different segment of the population
Manpower to population ratio	<ul style="list-style-type: none"> •Quick and easy to use and to interpret •Data requirement usually modest and data relatively insensitive to errors within the validity of the underlying assumptions •If current health situation is reasonable satisfactory, maintenance of status quo is an useful policy •When ratio is end result of application of another, more precise method, this can be useful as short cut for short range and intermediate range planning •Can project physician number at 10-15 years with reasonable accuracy using sensitivity analysis or stochastic simulation 	<ul style="list-style-type: none"> • Easy to select unrealistic ratio •Black box method- general used for single category and does not allow to explore interaction between numbers, mix, distribution, productivity and outcome •Base years inadequate ratio will likely to continue in target year, may show the manpower shortage •Provides little insight into the dynamic determinants and evolution of health care demand •Primary emphasis is on manpower, planners may neglect potential for improving productivity, distribution, utilization, relevance of services etc •Difficult to access feasibility 	<p>Especially applicable to countries with:</p> <ul style="list-style-type: none"> •Reasonably acceptable health condition and health care delivery •A relatively stable health sector •Limited planning resources •Either active or passive approach towards delivery of health services •Either public of private sector dominance •Reasonable comparable international models is available

the four basic approaches for estimating health manpower requirement (Dreesch et al., 2010; Roberfroid et al., 2009; Hall and Meji, 1993).

Conclusion

Estimating the requirement and forecasting health

manpower is the most difficult but essential task for planners. Any assessment of the optimal number of health manpower, regardless of the specific

method used, is bound to have a large range of uncertainty. Hence, any country considering requirement and forecasting of health manpower can deviate from intentions in either direction. Therefore the important issue, from public health perspective, is that it is possible to either underestimate or overestimate the requirement. An oversupply may blow up healthcare costs through a possible supplier-induced demand and may lower quality of health services provided by under-employed physicians, while an undersupply may result in unmet health needs and possible health inequities. The main concern must be to have the right number and appropriate mix and distribution of health manpower to provide quality health care service to achieve positive health outcome.

Conflict of Interests

The authors have not declared any conflict of interests.

REFERENCES:

- Adams O, Wood A (1990). Physicians resource planning. The adjusted service target approach. Suggested pilot project prepared for the Royal College of Physician and Surgeon of Canada. Ottawa: curry Adams and Associates, Inc.
- Angus D, Kelley M, Schmitz R, White A, Popovich J (2000). Caring for the critically ill patient. Current and projected workforce requirements for care of the critically ill and patients with pulmonary disease: can we meet the requirements of an aging population? *JAMA* 284:2762-2770.
- Anderson GE, Han KC, Miller RH, Johns ME (1997). Comparison of Three Methods for Estimating the Requirements for Medical Specialists: The Case of Otolaryngologists. Available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1070178/pdf/hsresearch00034-0016.pdf>.
- Dreesch N, Dolea C, R dal Poz M, Goubarev A, Adams O, Aregawi M, Bergstrom K, Fogstad H, Sheratt D, Linkins J, Scherpbier R, Youssef-Fox M (2005). An approach to estimating human resource requirements to achieve the Millennium Development Goals. *Health Policy Plan* 20(5):267-276. <http://www.ncbi.nlm.nih.gov/pubmed/16076934>
- Goodman D, Fisher E, Bubolz T, Mohr J, Poage J, Wennberg J (1996). Benchmarking the US physician workforce. An alternative to needs-based or demand-based planning. *JAMA* 276:1811-1817. Available at <http://www.ncbi.nlm.nih.gov/pubmed/8946901>
- Hall TL, Meji A (1993). Health manpower planning: principles, methods and issues, WHO.
- Hornby P, Ray DK, Shipp PJ, Hall TL (1980). Guidelines for health manpower planning: A Course book. World Health Organization 1980. Available at [http://whqlibdoc.who.int/publications/9241541563_\(p1-p188\).pdf](http://whqlibdoc.who.int/publications/9241541563_(p1-p188).pdf).
- Harris JE (1986). How many doctors are enough? *Health Affairs*, 5(4):73-83. Available at <http://content.healthaffairs.org/content/5/4/73.citation>
- Joyce C, McNeil J, Stoelwinder J (2006). More doctors, but not enough: Australian medical workforce supply 2001–2012. *Med. J. Aust.* 184:441-446. <https://www.mja.com.au/journal/2006/184/9/more-doctors-not-enough-australian-medical-workforce-supply-2001-2012>
- Narasimhan V, Brown H, Pablos-Mendez A, Adams O, Dussault G, Elzinga G, Nordstrom A, Habte D, Jacobs M, Solimano G, Sewankambo N, Wibulpolprasert S, Evans T, Chen L (2004). Responding to the global human resource crisis. *Lancet* 363: 1469-1472 <http://www.ncbi.nlm.nih.gov/pubmed/15121412>
- O'Brien-Pallas L, Baumann A, Donner G, Murphy GT, Lochhaas-Gerlach J, Luba M (2001). Forecasting models for human resources in health care. *J. Adv. Nurs.* 33:120-129. Available at <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2648.2001.01645.x/full>
- Persaud D, Cockerill R, Pink G, Trope G (1999). Determining Ontario's supply and requirements for ophthalmologists in 2000 and 2005: 2. A comparison of projected supply and requirements. *Can. J. Ophthalmol.* 34:82-87.
- Peter J (1998). Shipp Workload indicators of staffing need (WISN): A manual for implementation. World Health Organization Division of Human Resources Development and Capacity Building Geneva, Switzerland.
- Peterson E, Rodin AE (2004). GMENAC report on U.S. physician manpower policies: Recommendations and reactions. Department of Postgraduate Medicine and Continuing Education, Wright State University School of Medicine, Dayton, OH 45401, U.S.A.
- Roberfroid D, Leonard C, Stordeur S (2009). Physician supply forecast: better than peering in a crystal ball? *Human Resources for Health*, 7:10 Available at <http://www.human-resources-health.com/content/pdf/1478-4491-7-10.pdf>
- Sirikanokwilai N, Wibulpolprasert S, Pengpaiboon P (1998). Modified population to physician method to project further requirement of physicians in Thailand. *Hum. Resour. Health Dev. J.* 2(3):197-209. Available at <http://www.moph.go.th/ops/hrdj/Hrdj5/HRDJ2.3/NICHA13.PDF>
- Song F, Rathwell T (1994). Stochastic simulation and sensitivity analysis: estimating future demand for health resources in China. *World Health Stat Q* 47:149-156.
- The world health report (2006). working together for health. World Health Organization, Geneva 2006. Available at <http://www.who.int/whr/2006/en/>.
- WHO (1990). Coordinated health and human resources development. Report of a WHO Study Group. Geneva: World Health Organization. <http://apps.who.int/iris/handle/10665/39544>

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